

## Claims

1. A waveguide orthomode transducer comprising: an electric wave branch means for branching a horizontally polarized electric wave included in a circularly-polarized-wave signal inputted thereto toward first horizontal symmetrical directions, and for branching a vertically polarized electric wave included in the circularly-polarized-wave signal toward second horizontal symmetrical directions; a first radio wave conducting means for conducting one electric wave of the horizontally polarized electric wave branched by said electric wave branch means, for conducting another electric wave of the horizontally polarized electric wave, for combining the electric waves of the horizontally polarized electric wave into one electric wave and dividing this electric wave into an electric wave of a basic mode and an electric wave of a higher mode, and for outputting them; and a second radio wave conducting means for conducting one electric wave of the vertically polarized electric wave branched by said electric wave branch means, for conducting another electric wave of the vertically polarized electric wave, for combining the electric waves of the vertically polarized electric wave into one electric wave and dividing this electric wave into an electric wave of a basic mode and an electric wave of a higher mode, and for outputting them.

2. The waveguide orthomode transducer according to Claim 1, characterized in that said electric wave branch means is provided with a circular main waveguide for conducting the circularly-polarized-wave signal inputted thereto via an

input/output terminal, a first square main waveguide for conducting the circularly-polarized-wave signal conducted by said circular main waveguide, and a second square main waveguide having an opening diameter different from that of said first square main waveguide, for branching the horizontally polarized electric wave included in the circularly-polarized-wave signal conducted by said first square main waveguide toward the first horizontal symmetrical directions, and for branching the vertically polarized electric wave included in the circularly-polarized-wave signal toward the second horizontal symmetrical directions.

3. The waveguide orthomode transducer according to Claim 1, characterized in that said electric wave branch means is provided with a first square main waveguide for conducting the circularly-polarized-wave signal inputted thereto via an input/output terminal, and a second square main waveguide having an opening diameter different from that of said first square main waveguide, for branching the horizontally polarized electric wave included in the circularly-polarized-wave signal conducted by said first square main waveguide toward the first horizontal symmetrical directions, and for branching the vertically polarized electric wave included in the circularly-polarized-wave signal toward the second horizontal symmetrical directions.

4. The waveguide orthomode transducer according to Claim 2, characterized in that said second square main waveguide has an end which is opposite to another end connected to said first square main waveguide and which is blocked by a short-circuit

plate on which a quadrangular-pyramid-shaped metallic block is placed.

5        5. The waveguide orthomode transducer according to Claim  
3, characterized in that said second square main waveguide has  
an end which is opposite to another end connected to said first  
square main waveguide and which is blocked by a short-circuit  
plate on which a quadrangular-pyramid-shaped metallic block is  
placed.

10

6. The waveguide orthomode transducer according to Claim  
1, characterized in that each of said first and second radio  
wave conducting means has a terminal for outputting an electric  
wave of a higher mode, which is blocked by a short-circuit plate  
15 and which is constructed of a dielectric with loss.